Hear Today…..Hear Tomorrow

BLOCK it.....

MOVE it.....

REDUCE it...

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Hear Today…..Hear Tomorrow

Hearing Conservation Training for Construction Workers

Toolbox Sessions

Contents:

- Hearing Conservation for toolbox sessions
- Twelve week outline of toolbox talks
- Covers the elements required for an effective hearing conservation program
- Geared for the construction industry

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Notes

Week Twelve: Hearing Testing

Objective: Learn the importance of annual monitoring.
You Need: N.A.
Teaching Methods: Lecture and discussion

The purpose of the hearing test is to monitor your hearing from year to year. Your first test or baseline will be used as the reference test. Future tests will be compared to the baseline to see if you are protecting yourself. It is important that you have an annual hearing test to determine if there are small changes in your hearing ability that you will NOT notice. The hearing tester will tell you your results and will compare to your baseline, when available. If they identify changes in your hearing test, they may recommend a retest to determine if the change is permanent or temporary. Regardless, if changes are identified you should take measures to limit any future damage.

You can also do daily monitoring of your hearing with a simple self-test. This works best if you drive yourself to work. When you reach your jobsite and are turning off the car, turn the radio to just barely loud enough to hear (Talk radio stations work well for this exercise). Then go on with your day . When you return at the end of the work shift check to see if you can still hear the radio with the engine off. If you can not hear the radio, then you need to think about what may have damaged your ears. Think of ways that you could protect yourself better.

REMEMBER YOU CAN:

⇒ **block it** (use of barriers),

⇒ **move it** (use of extension cords & hoses with generators & compressors, and/or

⇒ **reduce it** (buy/rent/lease quiet and hearing protection).

YOU ONLY HAVE ONE SET OF EARS.....PROTECT THEM

Assignment:

Use the tools you have learned over the last 11-weeks to protect the hearing you have. You should not have to lose your hearing to feed and clothe your family. Now you have the tools and education to protect yourself and promote healthy hearing to your family and friends.

Overview & Preparation

The goal of this booklet is to help construction workers prevent the occurrence of noise induced hearing loss in the construction trades. This training pamphlet provides employers with 12-weekly sessions on the elements of hearing conservation training. The overall layout and methods are designed as a model training program based on best practices that are feasible for the construction industry. Each week will take approximately 10-20 minutes to complete.

Prior to each weekly session make sure you have any equipment/materials necessary for the lesson. You may want to secure or procure them at the beginning, since some items may take time to borrow or purchase. The items are outlined below:

- Hearing protective device (hpd) samples (foam plugs, pre-formed plugs, banded/canal caps/semi-aural, & earmuffs.
- Sound level meter
- Noise level Caution Stickers
- Say What Audiotape or CD and the appropriate portable player
- Materials to make barriers
- Noise making Tools or Equipment for demonstrations

Each week you will want to begin with a review of the previous week's assignment. After discussion of the assignment you will follow the lesson plan for the given week.

This guidance product is advisory in nature and informational in content. The extent of a construction employer's obligation to address noise hazards is governed by WAC 296-817. The recommendations in this guidance product should be adapted to the needs and circumstances of each individual place of employment.

Week One: Hearing Loss Prevention

Objective: Encourage the workers to value their hearing .

You Need: A quiet area, Say What audio demo, cd player & Say What sheets for all workers present

Teaching Methods: Brief introduction, audio demo & brief discussion

Instructor Note: Review the course goals and schedule of weekly topics

Ask the workers to give examples of things they like to listen to: Music, Friends, Family and Television are common items listed. Indicate that with a noise induced hearing loss, it is difficult to enjoy these activities. Even with the use of hearing aids it can be hard to understand some words and even harder to enjoy music, as the sound is distorted.

Let everyone know that losing your hearing is serious. Once you lose your hearing from noise, you can not bring it back. It will never get better once permanent. How do you know if you have a hearing loss? If you experience any of the following, you may have a hearing loss:

⇒ Difficulty hearing others when there is background noise.
⇒ Difficulty hearing people in groups or meetings
⇒ People sound like they're mumbling or talking too quickly. You have to ask them to repeat themselves and watch them while they speak.
⇒ You need to turn the volume on the TV higher than other people.
⇒ You hear the telephone better with one ear than the other.

If you lose your hearing from noise it will affect both your personal and professional life. You will most likely have difficulty hearing what people say! Without good communication, messages are misinterpreted and that can lead to problems at home and on the job. You can put yourself and others at risk.

Find and play the Say What audio demo found on the accompanying cd during this session. You will want to make worksheets like the one shown in the picture to the right, prior to the session.

Assignment: Think about the symptoms of hearing loss and see if you experience any of the above items.

SAY WHAT

	A	B	C
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Week Eleven: Non-Occupational Noise

Objective:

Learn about common non-occupational noise and how to limit exposure using the same methods we use at work.

You Need: Flipchart to reproduce list to right or make handout to pass out to participants

Teaching Methods: Lecture and discussion

Remember that when noise levels reach 85 dB they could cause damage to your ears both on and off the job. It is important to protect your hearing both on and off the job, particularly if you have both work-related noise exposure and follow it with non-occupational noise exposure.

The higher the noise level the less time it takes to do damage. Remember to use the tools you have learned over the last weeks to keep your hearing where it is today.

Be a role model for your family and friends. Use hearing protection when you mow the lawn, use power tools or engage in recreational activities like motorboats, cycles and snowmobiling.

If you have ringing in your ears after being exposed to noise, you have done damage to your ears. Take action to protect your ears better if the ringing occurs.

Assignment:

Use hearing protection or some other means of noise reduction over the next week.

Common Non-Occupational Noise Levels

The numbers on the left represents the volume level. The larger the number the higher the volume or decibels.

- 140 Rock Concerts
- 120 Boom cars, Snowmobiles
- 110 Chainsaw
- 100 Wood Shop
- 90 Lawn mower, Motorcycle, free-way noise
- 80 City traffic noise
- 60 Normal conversation
- 40 Refrigerator humming
- 20 Whispered Voice
- 0 Threshold of normal hearing

Week Ten: Reward and Enforcement

Objective: Reinforce the strategies learned to limit noise levels and exposures. Raise the comfort level for workers to discuss this safety issue with their peers and supervisors. Reach consensus on how to effectively bring these issues to the attention of the Employer/General Contractor.

You Need: Checklist for attendees to complete (file is on cd)

Teaching Methods: Discussion and small group participation

Review the objectives and then have participants break into small groups of 2 or 3 to come up with a reward and/or reinforcement plan for limiting noise levels. Use this plan as a way to recognize and reward crews and individuals who have taken the initiative to:

- ◊ Move the noise source away from workers;
- ◊ Move workers away from noise source;
- ◊ Block noise exposures by using barriers; or
- ◊ Use proper Hearing Protection as needed

Using suggestion boxes or discussions at Safety Meetings engages workers in problem solving activities that will lead to on-site noise reduction. Recognizing and rewarding good ideas and suggestions, even in the smallest of ways, reinforces good thinking and good actions. Consider making a checklist available to all site personnel that might include:

- ◊ List tools used on this site you think present noise hazards
  - •
  - •
- ◊ List Equipment used on this site you think present noise hazards
  - •
  - •
- ◊ Suggest ways that noise hazards might be reduced
  - •
  - •

Having workers see themselves as problem solvers in the reduction of job-site noise will promote that same line of thinking for other Safety & Health Challenges.

Assignment:

Think of two types of non-occupational noise exposure you have experienced.

Week Two: Noise Induced Hearing Loss

Objective: Inform workers of the effects of noise on hearing and other effects to the body.

You Need: Cochlea Poster found on cd or at www.builditsmart.org

Teaching Methods: Lecture and review of Cochlea Poster

Noise Induced Hearing Loss occurs when an individual is exposed to noise levels that are hazardous to the ear. A very loud or explosive sound may cause immediate damage, but more commonly the hearing loss occurs slowly.

Exposure to noise levels that are as loud as a vacuum cleaner for 8 hours can cause damage to your inner ear. In some cases, the loss can be temporary where the inner workings of your ear will be temporarily damaged. After about 14-16 hours the inner ear will recover from the exposure, but with day after day exposure the ears will be less likely to recover fully. When that happens the hearing loss becomes permanent.

The damage will first occur in the higher pitches and it will affect how speech is heard. You may have a hearing loss if you find that speech sounds muffled or distorted.

Noise will also affect your body. Often times when you have hearing loss, whether temporary or permanent, you will experience ringing in your ears. This ringing sensation is called tinnitus. Exposures to loud noise levels can also cause anxiety, increase your blood pressure, or may lead to other health problems such as heart disease.

NOISE INDUCED HEARING LOSS IS 100 % PREVENTABLE

Assignment: Bring your hearing protection to next week's meeting.

Week Three: Intro. to Hearing Protection

Objective: Introduce different types of hearing protection devices (hpds) and demonstrate the proper use and maintenance.

You Need: Many types of hpds (some examples are shown in the picture to the right)

Teaching Methods: Lecture, demonstration and assessment of hpd fit

Hearing protection devices are not effective unless you use them properly! Make sure to find and use the best type for you and the task at hand.

There are many different types: earmuffs, moldable earplugs, pre-formed earplugs, banded/canal caps/semi-aural, and custom earplugs. You should consider seven things when selecting your hearing protection for the job you will do: Convenience, Comfort, Communication Needs, Hygiene, Noise Reduction, Hearing Ability/Loss, & Noise Level of Task.

Of those items listed, convenience and comfort are often the highest predictors of usage. Generally speaking, earmuffs and moldable earplugs offer the most noise reduction, but preformed or canal caps may be more suitable to most aspects of construction, due to convenience and lower daily average noise levels.

Type of Hearing Protection	Noise Reduction	Advantages	Disadvantages
Foam Plugs/ moldable	High	Readily Available	Hygiene, Time consuming fit & overprotection concerns
Pre-formed Plugs	Mid	Quick Fit	Costly to replace if lost
Banded/Canal Caps/semi-aural	Low	Quick Fit	Uncomfortable to some
Earmuffs	High	Quick Fit Hygiene	Hot in heat & difficult to fit with safety glasses
Custom	Low to Mid	Quick Fit	Replace every 3-5 yrs., Costly

CAUTION: The higher the protection does not ensure they are the best type for your situation.

Week Nine: Noise Reduction Demo.

Objective: Work as a team to reduce the noise level generated by a particular task, tool or piece of equipment.

You Need: Noise making equipment or tool, sound level meter & barrier

Teaching Methods: Demonstration and discussion

As a group, identify a source of noise (compressors, saws, generators, etc.) that a barrier could be built for to bring noise levels down for others working nearby. There are many materials on the jobsite that would work to build barriers, such as plywood, visquene and 2x4s, and sheet foam. Challenge yourselves to think of other materials that could be substituted. The picture, to the right, shows an example of using three pieces of plywood hinged together forming a barrier to those nearby.

Once you have selected the source of noise and the type of barrier to build, take noise level measurements at the worker's ear level, if a tool is being used, or at the equipment source. Then take a noise level measurement without the barrier in place some determined distance out, such as 5-10 feet away from the source. Record the noise level measurements and repeat the exercise with the barrier in place. Again taking measurements at the worker or equipment and some designated distance away from the noise source.

In most cases, you should see a reduction in noise levels with the use of the barrier for the measurements taken some determined distance from the noise source. Sometimes you may even see a reduction in the noise levels at the workers level if the barrier was constructed from sound absorptive materials (foam).

Assignment:

Demonstrate a hand gesture that could be used by co-workers and supervisors to remind others nearby to use hearing protection.

Week Eight: Maintaining Equipment

Objective: Use Tool and Equipment Maintenance to reduce noise levels.

You Need: N.A.

Training Methods: Discussion with lecture

Noise levels on the jobsite can be lowered by maintaining equipment/tools in their original working order. Simple steps can be taken to keep the items working at lower noise levels. Lubrication, using sharp saws and drills, using mufflers, and replacing faulty equipment can reduce the noise levels on the jobsite.

Keep moving parts well lubricated to keep noise levels down. When using saws, make sure that the blades are sharp. Sharp blades can reduce noise levels and task time. Save your ears and money at the same time. Even older noisier equipment can be easily modified by the addition of mufflers or insulated panels.

Always maintain your tools and equipment. Regular attention to the proper function of the equipment is important in keeping noise levels down. A maintenance schedule should be used to check on the equipment to make sure it is working properly and making the least amount of noise.

Does the employer have a regularly scheduled tool and equipment maintenance program?

Does the tool and equipment program consider noise reduction as part of the program objective?

By raising these questions you can positively affect noise reduction.

Assignment: Identify at least one piece of equipment and at least one tool that could be shielded by a barrier to reduce noise exposures for those working near the operator.

Week Three : Continued

Note to Trainer/Supervisor: Let the workers select a preformed or canal cap type to try for two weeks, as it can take up to two weeks to adjust to new hpds. Purchase a variety of types for your workers to try.

Usage and Care of HPDs:

Follow the manufacturers directions for usage and care found on the original packaging that the hearing protection was sold in. If the hpd looks worn or overused replace the overused portion or entire hpd.

When to Use:

Follow this general rule: use your hearing protection if you have to raise your voice to speak with someone 2-3 feet away, about the level of a vacuum cleaner or 85 dBA .

Using Moldable Earplugs: Demonstration and Practice

Have everyone demonstrate their ability to properly place a moldable earplug following the directions outlined below:

- ⇒ With clean hands roll the earplug down lengthwise.
- ⇒ With your opposite hand reach over your head and gently pull your ear up and outwards.
- ⇒ Insert the earplug.
- ⇒ Release your ear while holding the earplug in until it expands to the shape of your ear canal.
- ⇒ When the earplug has fully expanded have a coworker look at the earplug, to see if it is positioned properly.
- ⇒ Self- check the placement by gently tugging on the earplug.
- ⇒ You should feel a slight tension build up, if it pulls out easily, you should reinsert the ear plug deeper. Try rolling the plug even smaller and try again.
- ⇒ Practice makes perfect

Assignment:

Identify two different pieces of equipment and two different tools that you suspect may be loud enough to cause hearing loss, to discuss next week.

Week Four: Noise Level Collection

Objective: Raise worker awareness of equipment and tools with loud noise levels.

You Need: Sound level meter (Type I or II is recommended) and calibrator

Teaching Methods: Lecture and sound level collection demonstration

Follow the manufacturers recommendations for calibration and operation. When you take the measurements try to position the microphone at the user's ear level, while following the manufacturer's directions on microphone angle. Document the findings for your records and if available, label the equipment/tools with a CAUTION sticker depicted above.

Rule of Thumb

Workers should wear hearing protection and/or consider other noise reducing alternatives when the sound level reaches 85 dBA or greater. When the noise level is as high as 100-105 dBA or greater you should use both ear-plugs and earmuffs at the same time.

When a sound level meter is not available use the 2-3 foot rule. If you have to raise your voice to be heard 2-3 feet away, you should assume that the noise level is at or above 85 dBA.

To determine your average noise exposure over a workday you will want to use a dosimeter. It is a device that is worn by an individual and will give an average level of noise exposure for the time worn. A dosimeter can also give you minute by minute averages of noise levels throughout the day.

Note: You are encouraged to replicate the CAUTION sticker depicted above (file on the cd) for labeling equipment noise levels. If you need a noise SLM or dosimeter(s) contact WISHA/OSHA at the local area or regional consultative service section. Third Party Administrators and Insurance carriers will often offer these services, as well.

Assignment:

Select hearing protection appropriate for the noise level identified on the equipment and tools you selected to test by next week.

Week Seven: Limit Noise Levels

Objective: Learn how to reduce noise levels.

You Need: Noise making equipment or tool, sound level meter and extension cords

Teaching Methods: Discussion, active participation and demonstration of noise reduction strategy

Noise levels on the jobsite can be lowered by choosing quieter tools/ equipment to do the job. Consider buying or renting quieter equipment and tools for future needs and look for ways to reduce the noise in your current inventory.

Manufacturers are motivated to meet the demands of the consumers. Therefore, if you believe that equipment could be made to be quieter, ask for it.

Three simple steps can be taken to lower noise levels at the worksite:

⇒ Reduce It: Consider buying/renting/leasing quiet tools/equipment and using appropriate hearing protection devices.

⇒ Move It: You can move the equipment further away with the use of extension cords, additional welding leads and air hoses.

⇒ Block It: You can block the noise by building temporary barriers of plywood or other on-site materials to block the noise from reaching the workers.

It is common knowledge that as you increase the distance from something making noise that the volume decreases. Demonstrate this noise reduction strategy by selecting a piece of equipment/tool that is loud and take a noise level measurement at one foot and five feet from the source, following manufacturer's recommendations on noise level measurement. Then move the equipment/tool 20 feet away, while keeping the sound level meter in the original location. Then take a measurement . Document and discuss the reduction in noise. (If possible, avoid reflective walls or surfaces as the sound can bounce back and alter the demonstration.)

The use of hearing protection should be considered after the above noise reducing strategies can not bring the noise levels down far enough below 85 dB.

Assignment:

Think of one tool or piece of equipment that could benefit from regular maintenance to reduce noise levels.

Week Six: Plan for Noisy Activities

Objective: Plan for noisy activities and limit people exposed to the noise.

You Need: Risk Charts and Weekly Activities Plan sheets (Print copies from accompanying cd)

Teaching Methods: Lecture with discussion and completion of Risk Charts and Weekly Activities Plan Sheets

Planning for noise can be one of the most effective ways to reduce exposure to a number of workers. Identify the tasks that will generate loud noises by trade and if possible limit other workers from working in the area. When feasible, you can make plans to schedule noisy activities during hours where less people are working (swing shift), rotate employees exposed to high levels of noise, and select and enforce the use of appropriate hearing protection. For very loud noise (100 dB+) the use of earplugs and earmuffs together may be needed.

Make use of daily and weekly safety meetings to discuss ways to limit noise levels. Each contractor should share what activities they are planning for the day/week and all site personnel should be discussing ways to limit exposure to others working nearby.

For particularly louder activities, you should consider rotating employees exposed to very loud noise levels for short time periods. Limiting the hours an individual works in the noise can greatly reduce the chances of noise induced hearing loss. Use barriers or post signs to keep other workers away from noisy areas. As the noise gets louder it takes less time to do damage to your hearing. Remember that at 85 dB it can take 8-hours to do damage, when noise is as loud as 100 dB it can take as little as 1-hour to damage your ear(s).

Assignment:

Identify one piece of equipment that could be moved further away from the working area to reduce noise levels reaching yourself and others.

Use Safety Meetings to Plan for NOISE

Week Five: Revisit Hearing Protection

Objective: Discuss the hearing protection that was given out in Week Three.

You Need: Replacement hearing protection

Teaching Methods: Discussion and re-evaluate fit of hearing protection

Ask the workers to list the benefits and drawbacks of the newer styles of hearing protection. If the workers feel that the hearing protection is not working, determine if they are getting a good fit. If the fit seems appropriate, the worker(s) may be expressing valid concerns of overprotection, inconvenience or discomfort. Try alternate types. Keep in mind convenience and comfort are often the highest predictors of usage.

Ask if the workers are more aware of the need for the use of hearing protection and if they are using it more or less. Encourage the use and enforce the use in the future.

You may also want to ask how many pairs of hearing protectors are used daily. Moldable (foam) types are usually less expensive per pair, but when compared to the number used in a day the non-moldable (pre-formed) may be as cost effective, if not more cost effective. Typically the foam plugs will require replacement many times during the day due to hygiene concerns, whereas the pre-formed type may last for many days or weeks.

Assignment:

Think of at least one way to reduce noise levels other than the use of hearing protection.